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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
PATTERSON, MARC A	

ART UNIT	PAPER NUMBER
1772	

DATE MAILED: 01/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/029,373	LEE, CHUNG J.	
	Examiner	Art Unit	
	Marc A Patterson	1772	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *7*.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The term 'benzocyclobutane' appears to be misspelled 'benzoxycyclobutane.'

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1 – 3, 5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over DeVries et al (U.S. Patent No. 5,567,835).

With regard to Claims 1 and 3, DeVries et al disclose a dielectric thin film (used in the preparation of multichip modules; column 1, lines 8 – 11) comprising a precursor Y-Z-Si(R'R'')-Ar-Si(R''''R''')-Z'Y'n wherein Y and Y' are the same benzocyclobutane moieties, Z and Z' are olefinic, Ar is oxygen, R', R'', R''' and R'''' are alkyl and n is at least 1 (a divinyl –1,1,3,3 – tetramethyldisiloxane; column 1, lines 8 – 30) DeVries fails to disclose R', R'', R''' and R'''' groups which are fluorinated alkyl. However, DeVries teaches that alkyl is equivalent to other groups, including fluorinated alkyl, as a component of the precursor (column 3, lines 38 – 41). It

would therefore be obvious for one of ordinary skill in the art to provide for fluorinated alkyl rather than alkyl in DeVries, since fluorinated alkyl is taught by DeVries to be part of the group which is equivalent to alkyl.

With regard to Claim 2, the substituent on the benzocyclobutane is hydrogen (column 1, lines 8 – 30).

With regard to Claims 5 and 7, the film is part of an integrated circuit (multichip module; column 1, lines 8 – 11). With regard to the claimed aspect of the film being 'deposited,' and the integrated circuit being 'manufactured via a dual damascene process,' the scope of the claims falls within the limitations of DeVries as discussed above. The method of making the film and circuit (product – by – process) is given little patentable weight.

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over DeVries et al (U.S. Patent No. 5,567,835) in view of Anda et al.

DeVries et al disclose a benzocyclobutane film as discussed above. DeVries et al fail to disclose a film which has a dielectric constant of less than 2.6.

Anda et al teach a benzocyclobutane film having a dielectric constant less than 2.6 (2.3; column 5, lines 35 – 42) for the purpose of obtaining a film which prevents thermal deformation (column 5, lines 44 – 55). The desirability of providing for a benzocyclobutane film which has a dielectric constant less than 2.6 in DeVries et al would therefore be obvious to one of ordinary skill in the art.

It therefore would have been obvious for one of ordinary skill in the art at the time Applicant's invention was made to have provided for a dielectric constant of less than 2.6 in

deVries et al, which is a benzocyclobutane film, in order to obtain a film which prevents thermal deformation as taught by Anda et al.

6. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over DeVries et al (U.S. Patent No. 5,567,835) in view of Kim et al (U.S. Patent No. 6,057,904).

DeVries et al disclose a benzocyclobutane film as discussed above. DeVries et al fail to disclose a film which is part of a liquid crystal display.

Kim et al teach a benzocyclobutane film which is part of a liquid crystal display (column 7, liens 40 – 42) for the purpose of obtaining a liquid crystal display for use in conjunction with a transistor (column 7, lines 25 – 27). The desirability of providing for a liquid crystal display in DeVries et al, which is a benzocyclobutane film, would therefore be obvious to one of ordinary skill in the art.

It therefore would have been obvious for one of ordinary skill in the art at the time Applicant's invention was made to have provided for a liquid crystal display in DeVries et al in order to obtain a liquid crystal display for use in conjunction with a transistor as taught by Kim et al.

7. Claims 8 – 10, 12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wong (European Patent 0227163) in view of DeVries et al (U.S. Patent No. 5,567,835) and Lee et al (U.S. Patent No. 6,140,456).

With regard to Claims 8 and 10, Wong discloses a paraxylylene film (therefore dielectric; page 2, lines 26 – 34) prepared from a precursor of the structure Y-Z-C(X'X'')-Ar-

{C(X''''X'''''')-Z'-Y'} where Y and Y' are benzocyclobutanes, Ar is an aromatic moiety having the general structure C_6H_4 and X', X'', X''' and X'''' are hydrogen (page 2, lines 26 – 34). With regard to Claim 8, Wong fails to disclose a film in which Y and Y' are vinyl and X', X'', X''' and X'''' are fluorine.

DeVries et al teaches the use of vinyl benzocylclobutane as a substituent of a dielectric film (column 1, lines 8 – 30) for the purpose of obtaining a film for use in integrated circuits (column 1, lines 8 – 11). The desirability of providing for a vinyl benzocyclobutane (therefore Y and Y' groups which are vinyl) in Wong, which is a dielectric film, would therefore be obvious to one of ordinary skill in the art.

Lee et al teach the fluorination of a paraxylylene film (column 3, lines 40 – 55) for the purpose of obtaining a paraxylylene film having a dielectric constant of less than 2.6 (column 2, lines 16 – 35). The desirability of providing for fluorination of Wong, which is a paraxylylene film, would therefore be obvious to one of ordinary skill in the art.

It therefore would have been obvious for one of ordinary skill in the art at the time Applicant's invention was made to have provided for Y and Y' are vinyl in Wong in order to obtain a film for use in integrated circuits as taught by DeVries et al and to have provided for the fluorination of Wong in order to obtain a film for use in integrated circuits as taught by Lee et al.

With regard to Claim 9, the substituent on the benzocyclobutane taught by DeVries et al is hydrogen (column 1, lines 8 – 30).

With regard to Claims 12 and 14, the film taught by DeVries et al is part of an integrated circuit (multichip module; column 1, lines 8 – 11). With regard to the claimed aspect of the film

being 'deposited,' and the integrated circuit being 'manufactured via a dual damascene process,' the scope of the claims falls within the limitations of DeVries as discussed above. The method of making the film and circuit (product – by – process) is given little patentable weight.

8. Claim 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wong (European Patent 0227163) in view of DeVries et al (U.S. Patent No. 5,567,835) and Lee et al (U.S. Patent No. 6,140,456) and further in view of Anda et al.

Wong, DeVries et al and Lee et al disclose a benzocyclobutane film as discussed above. Wong, DeVries et al and Lee et al fail to disclose a film which has a dielectric constant of less than 2.6.

Anda et al teach a benzocyclobutane film having a dielectric constant less than 2.6 (2.3; column 5, lines 35 – 42) for the purpose of obtaining a film which prevents thermal deformation (column 5, lines 44 – 55). The desirability of providing for a benzocyclobutane film which has a dielectric constant less than 2.6 in Wong, DeVries et al and Lee et al would therefore be obvious to one of ordinary skill in the art.

It therefore would have been obvious for one of ordinary skill in the art at the time Applicant's invention was made to have provided for a dielectric constant of less than 2.6 in Wong, DeVries et al and Lee et al, which is a benzocyclobutane film, in order to obtain a film which prevents thermal deformation as taught by Anda et al.

9. Claims 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wong (European Patent 0227163) in view of DeVries et al (U.S. Patent No. 5,567,835) and Lee et al (U.S. Patent No. 6,140,456) and further in view of Kim et al (U.S. Patent No. 6,057,904).

Wong, DeVries et al and Lee et al disclose a benzocyclobutane film as discussed above. Wong, DeVries et al and Lee et al fail to disclose a film which is part of a liquid crystal display.

Kim et al teach a benzocyclobutane film which is part of a liquid crystal display (column 7, liens 40 – 42) for the purpose of obtaining a liquid crystal display for use in conjunction with a transistor (column 7, lines 25 – 27). The desirability of providing for a liquid crystal display in Wong, DeVries et al and Lee et al, which is a benzocyclobutane film, would therefore be obvious to one of ordinary skill in the art.

It therefore would have been obvious for one of ordinary skill in the art at the time Applicant's invention was made to have provided for a liquid crystal display in Wong, DeVries et al and Lee et al in order to obtain a liquid crystal display for use in conjunction with a transistor as taught by Kim et al.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc Patterson, whose telephone number is (571) 272 – 1497. The examiner can normally be reached on Monday through Friday from 8:30 AM to 5:00 PM. If attempts to reach the examiner by phone are unsuccessful, the examiner's supervisor, Harold Pyon, can be reached at (571) 272 – 1498. FAX communications should be sent to (703) 872-9310. FAXs received after 4 P.M. will not be processed until the following business day.

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1772
1/12/04